IMAGESYSTEMS

FP2080CHB

MEDICAL DISPLAY

USER'S MANUAL

3MP High Bright Color

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IMPORTANT SAFETY INSTRUCTIONS

Warning and Caution

Warning

To prevent fire or shock hazards, do not expose this unit to rain or moisture. Also, do not use this unit's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted.

Refrain from opening the cabinet as there are high voltage components inside. Refer servicing to qualified service personnel.

Caution

To reduce the risk of electric shock, make sure power cord is unplugged from wall socket. To fully disengage the power to the unit, please disconnect the power cord from the ac outlet. Do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.

Caution

- Medical Display is intended to use in displaying images for review and analysis by trained medical practitioner for diagnose in CT, MRI, HIS and PACS. This device is not suitable for a digital mammography system.
- Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked "Hospital Only" or "Hospital Grade".
- That SIP/SOPs need to be connected properly and that any unused SIP/SOPs shall not be accessible for the patient to contact in the patient area after the LCD is integrated into a medical system.

Caution

- To prevent electric shock, please do not remove cover or any internal components. Refer to a qualified technician for service.
- Unplug the monitor from the power outlet before cleaning. Use a damp cloth.
- Please follow the national guidelines for unit disposal.
- This product can not be used for a life-support system.
- The unit is for exclusive interconnection with IEC 60XXX certified equipment outside of patient environment and IEC 60601-1 certified equipment inside the patient environment.
- Contact Information:
  RICHARDSON ELECTRONICS
  Display Systems Group
  12975 16th Ave. N., Suite 300
  Plymouth, MN 55441

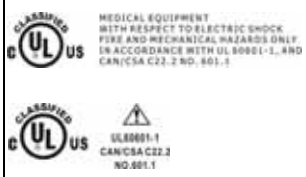
  Sales: 888-735-7373
  TEKLINK Technical Support: www.teklink.rell.com
  www.imagesystemscorp.com

Explanation of Graphical Symbols

	This symbol warns user that un-insulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.		Main switch ON
	This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.		Main switch OFF
	Protective earth terminal marked		DC Input

When operating the Medical Display with a 220-240V AC power source in Europe, use the power cord provided with the monitor. In the UK, a BS approved power cord with a moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cord is not supplied with this equipment please contact your supplier.
When operating the Medical Display with a 220-240V AC power source in Australia, use the power cord provided with the monitor. If a power cord is not supplied with this equipment please contact your supplier.
For all other cases, use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Safety Logo

No.	Logo	Description
1		Authentication sign of Standard Inspection Bureau for U.S.A. Complies with UL 60601-1 AND CAN/CSA C22.2 NO. 601.1
2		Authentication sign of Standard Inspection Bureau for Canadian and U.S.A safety standard at the same time. Complies with UL60950, CAN/CSA-C22-2 N60950-1-F03.
3		The LCD monitor complies with the 93/42/EEC, EN60601-1, EN60601-2 of related European standards.
4		We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.

FCC Information

Use the attached specified cables with the Medical Display so as not to interfere with radio and television reception.

1. The power supply cord you use must have been approved by and comply with the safety standards of U.S.A., and meet the following condition.
   - ◆ Power supply cord：Non shield type, 3-conductor, Hospital Grade Plug
   - ◆ Length：2.0m
   - ◆ Plug shape：U.S.A
2. Please use the supplied shielded video signal cable, 15-pin mini D-SUB to DVI-A cable or DVI-D to DVI-D cable. Use of other cables and adapters may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures：

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult your dealer or an experienced radio/TV technician for help.

If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: “How to Identify and Resolve Radio-TV Interference Problems.” This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

Manufacturer's Recycling and Energy Information

Disposing of your old product

◆ Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself.
The mark on electrical and electronic products only applies to the current European Union Member States.

◆ Outside the European Union
If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

Classification

◆ Adapter
SKYNET, SNP-A127-M
◆ No Applied Part.
◆ No protection against the ingress of water: IPX0
◆ Mode of operation: Continuous Operation
◆ The equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide: Not AP or APG Category:

Quick Start

To attach the LCD monitor to your system, follow these instructions：
1. Turn off the power to your computer.
2. For the PC：Connect the DVI signal cable to the connector of the display card in your system. Tighten all screws.
   For the PC with Analog output：Connect the 15-pin mini D-SUB to DVI-A signal cable to the connector of the display card in your system(Figure A-01).
3. Connect the DVI signal cable to the connector on the back of the monitor. Place the video signal cable (Figure A-01).
   Note: Incorrect cable connections may result in irregular operation, damage display quality / components of LCD module and/or shorten the module's life.
   Note: Collect cables and keep them in the stand with cable cover. The cable cover can be attached on the front or back side of Tilt Stand. Please check Tilt, Rise and Lower monitor screen and screen rotation when you manage cables.
4. Connect one end of the power cord to the AC inlet on the back of the monitor and the other end to the power outlet.
   Note: Please refer to Caution section of this manual for proper selection of AC power cord.
5. The Vacation Switch on the left side of the monitor must be turned on. Turn on the monitor with the front power button.
   Note: The Vacation Switch is a true on/off switch. If this switch is on the OFF position, the monitor cannot be turned on using the front button.
6. Turn on the computer. No-touch Auto Adjust automatically adjusts the monitor to optimal settings upon initial setup for most timing. For further adjustments, refer to the OSD section of this User's Manual.
   Note：If you have any questions, please refer to the Troubleshooting section of this User's Manual.

Figure A-01

Raise and Lower Monitor Screen

The monitor may be raised or lowered in either Portrait or Landscape mode. To raise or lower screen, place hands on each side of the monitor and lift or lower to the desired height.
Note: Handle with care when raising or lowering the monitor screen.

Screen Rotation

Before rotating, the screen must be raised to the highest level to avoid knocking the screen on the desk or pinching with your fingers. To raise the screen, place hands on each side of the monitor and lift up to the highest position (Figure A-02).
To rotate screen, place hands on each side of the monitor screen and turn clockwise from Landscape to Portrait or counterclockwise from Portrait to Landscape.

Note: To rotate OSD menu between landscape and portrait, refer to "OSD Controls" section, "OSD ROTATION" function.

Tilt and Swivel Monitor Screen

Figure A-03

Figure A-04

Tilt
Grasp top and bottom sides of the monitor screen with your hands and adjust the tilt as desired.

Swivel
Grasp both sides of the monitor screen with your hands and adjust the swivel as desired.

Note: If the screen is rotated counterclockwise, the tilt function is not available.
Note: Handle with care when tilting the monitor screen

Package Contents

Included with your LCD monitor are following items:

1pcs
DVI Cable

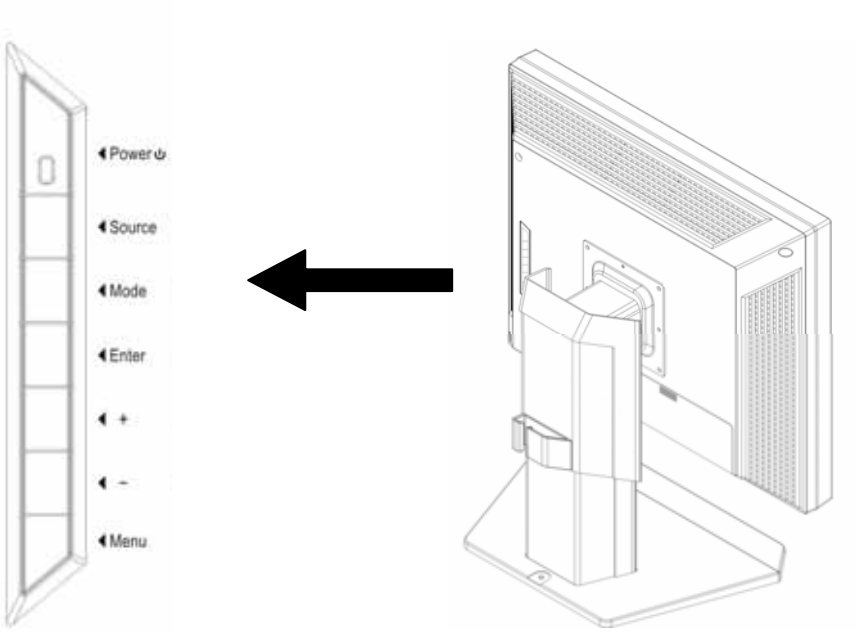
1pcs
Power Cord

1pcs
User 's Manual (CD-ROM)

1pcs
Quick Setup

OSD Controls

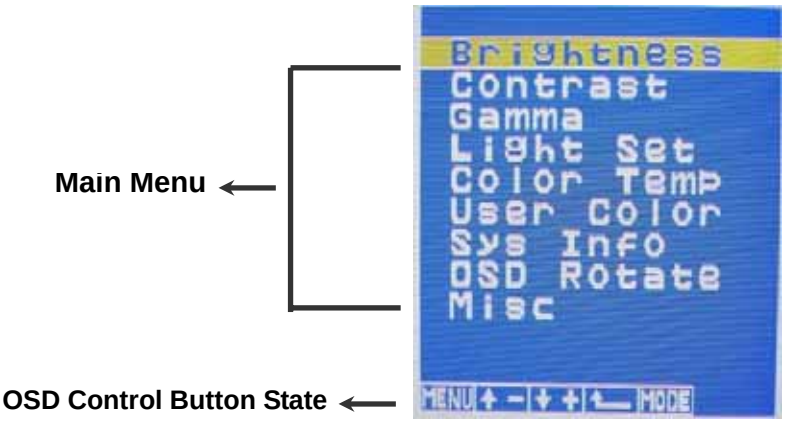
Your LCD monitor allows you to easily adjust the characteristics of the image being displayed. All of these adjustments are made using the control buttons on the monitor. While you use these buttons to controls, an OSD shows you their change.



Main Function	Menu
Power	Power Indicator: Green: Normal Orange: Power Saving 、No Signal Off: Power Off
Source	Gamma items selection.*
Mode	Show Information.
Enter	Access and control the function of sub-menu when OSD is shown.
+	Press the "+" to selection sub-menu items and increase adjustment when OSD is shown.
-	Press the "-" to selection sub-menu items and decrease adjustment when OSD is shown.
Menu	Start the OSD feature. Exits the OSD controls. Exits to the OSD main menu.

*Refer to the Hot Key Controls section.

Main Menu



OSD Function

Primary Directory	Secondary Directory	Description
Brightness	Brightness	Adjust the brightness of the screen.
	Exit	Exit sub-menu.
Contrast	Contrast	Adjust the contrast of the image.
	Exit	Exit sub-menu.
Gamma	Gamma Off:	Off gamma function.
	Gamma 1.8	Set the Gamma value to 1.8
	Gamma 2.0	Set the Gamma value to 2.0
	Gamma 2.2	Set the Gamma value to 2.2
	Gamma DICOM	Set the Gamma to standard value.
	Gamma User	Set the Gamma value for user.
	Exit	Exit sub-menu.
Light Sensor	Light 300	Set the light sensor to 300.
	Light 400	Set the light sensor to 400.
	Exit	Exit sub-menu.
Color Temp	Color 6500	Set the color temp. to 6500K.
	Color 7500	Set the color temp. to 7500K.
	Color 8200	Set the color temp. to 8200K.
	Color 9300	Set the color temp. to 9300K.
	Color BL	Set the color temp. to 9300K and DICOM Gamma.
	Color CL	Set the color temp. to 6500K and DICOM Gamma.
User Color	User Red	Red Gain from Color Temp.
	User Green	Green Gain from Color Temp.
	User Blue	Blue Gain from Color Temp.
Information	Shows the information of the current settings, include: HFREQ: Horizontal Scanning Frequency VFREQ: Vertical Scanning Frequency Res: Display Resolution Model: The Model of MCU & FPGA Mver: MCU Version Fver: FPGA Version	
Reset	Restore to factory settings.	
Exit	Exit OSD menu.	

Recommended Use

For optimum performance, please note the following when setting up and using the multisync LCD monitor:

- Do not open the monitor. There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

Immediately unplug your monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the monitor.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.
- Do not bend power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- Do not cover vent on monitor.
- If monitor or glass is broken, do not come in contact with the liquid crystal and handle with care.

Caution

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet, which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.
- Image persistence is when a residual or "ghost" image of a previous image remains visible on the screen. LCD monitors' image persistence is not permanent, but constant images being displayed for a long period of time should be avoided. To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

Correct placement and adjustment of the monitor can reduce eye, shoulder and neck fatigue. Check the following when you position the monitor:

- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 50 cm.
- Rest your eyes periodically by focusing on an object at least 50 cm away.
- If reflected light makes it hard for you to see your screen, use an anti-glare filter.
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.

Ergonomics

To realize the maximum ergonomics benefits, we recommend the following:

- Adjust the backlight to best state.
- Do not position the Contrast control to its maximum setting.
- Use the preset Size and Position controls with standard signals.
- Use the preset Color Setting.
- Do not use primary color blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast.

CLEANING

WARNING

If you dropped any material or liquid such as water onto the monitor when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

CAUTION

- For safety reasons, turn-off the power switch and unplug the monitor before cleaning.
- Do not scratch or rub the screen with a hard object.
- Never use any of the following solvents on the Medical Display. Harsh chemicals may cause damage to the cabinet and the touch sensor.
  Thinner Spray-type cleaner, Benzene, Wax, Abrasive cleaner, Acid or Alkaline solvent

CABINET

- Remove dirt with a lightly moistened cloth and a mild solvent detergent. Then wipe the cabinet with a soft dry cloth.

Product Specifications

Specifications

Specifications \ Model		FP2080CHB
Panel Characteristics	LCD Display	TFT LCD Color
	Active screen size	54cm(21.3 inches)
	Pixel Pitch	0.2115(H) × 0.2115(V)mm
	Pixel Format	2048x1536 / 1536x2048
	Viewing Angle (Horizontal)	170degrees@CR>=10
	Viewing Angle (Vertical)	170degrees@CR>=10
	Display Colors	True 8-bit and can simulate to 10-bit
Adapter	Power Input	12V, 9A, 108W
Environment Conditions	Operating Temperature	+10℃ ~ +35℃
	Storage Temperature	-20℃ ~ +60℃
	Operation Relative Humidity	30% ~75% Non-Condensing
	Storage Relative Humidity	10% ~95% Non-Condensing
	Atmospheric pressure	500~1060 hPa
Mechanical Dimensions	Width/ Width without Stand	474 / 474mm
	Height/ Height without stand	455 / 380 mm
	Depth / Depth without stand	252 / 103 mm
	Monitor Weight / Weight without stand	11.3 / 7.4 kg
Packaging	Packaging Specification	The "Top Level Assembly" shall meet the Packaging Specification.
	Ink	The ink shall not rub off after a suitable drying time.
	Multiple Trips	The carton shall withstand 10 trips by any combination of air, rail, land, or sea transportation.
	Shipping Carton Type	One Piece Construction
Sensor Device	Ambient Sensor	Detects environment light.
	Front Sensor	Detects Panel Luminance
	Backlight Sensor	Detects internal Panel Luminance

Display Mode

Model: FF2080CHB

Mode		Resolution	Dot Clock (MHZ)	Vertical Scanning Frequency (Hz)	Horizontal Scanning Frequency (kHz)
VESA	QXGA	2048 x 1536	65	60	96.72

Features

- **DVI**
  The integrated interface ratified by the Digital Display Working Group (DDWG) that allows both digital and analog connectors off of one port. The "I" stands for integration for both digital and analog. The digital portion is DVI based.

- **DFP (Digital Flat Panel)**
  An all-digital interface for flat panel monitors which is signal compatible with DVI. As a DVI-based digital only connection, only a simple adapter is necessary for compatibility between DFP and other DVI-based digital connectors such as DVI and P&D.

- **P&D (Plug and Display)**
  The VESA standard for digital flat panel monitor interfaces. It is more robust than DFP since it allows for other options off a signal connector (options like USB, analog video and IEEE-1394-995). The VESA committee has recognized that DFP is a subset of P&D. As a DVI-based connector (for the digital input pins), only a simple adapter is necessary for compatibility between P&D and other DVI-based digital connector such as DVI and DFP.

- **Pivoting Stand**
  Allows users to adjust the monitor to the orientation that best fits their application, either Landscape orientation for wide documents, or portrait orientation for the ability to preview a full page on one screen at one time. The Portrait orientation is also perfect for full screen video conferencing.

- **Color Control Systems**
  Allows you to adjust the colors on your screen and customize the color accuracy of your monitor to a variety of standards.

- **OSD (On-Screen Display) Controls**
  Allow you to quickly and easily adjust all elements of your screen image via simple to use OSD.

- **Ergo Design Features**
  Enhance human ergonomics to improve the working environment, protect the health of the user and save money. Examples include OSD controls for quick and easy image adjustments, tilt base for preferred angle of vision.

- **Intelligent Power Manager System**
  Provides innovative power-saving methods that allow the monitor to shift to a lower power consumption level when on but not in use, saving of your monitor energy costs, reducing emissions and lowering the air conditioning costs of the workplace.

- **Multiple Frequency Technology**
  Automatically adjusts monitor to the display card's scanning frequency, thus displaying the resolution required.

- **FullScan Capability**
  Allow you to use the entire screen area in most resolutions, significantly expanding image size.

- **Wide Viewing Angle Technology**
  Allows the user to be able to see the monitor from any angle from any orientation — Portrait or Landscape. Provides the same viewing angles either up, down, left or right.

- **Gamma**
  Internal circuitry automatically converts 8-bit data from the PC to 10-bit and back to 8-bit, producing smooth. Gamma can be set by using preset values or creating a custom setting.

Troubleshooting

If the Medical Display fails to function correctly, please follow these steps for a possible solution.
1. Perform the adjustments according to **Quick Start** section.
2. Refer to the following troubleshooting chart if you cannot resolve the problem from other sections of this Users Guide.
3. If the problem is not described below or you cannot correct the problem, stop using the monitor and contact your dealer or the nearest service center for further assistance.

Problem	Check to see
No picture	The signal cable should be completely connected to the display card/computer.
	The display card should be completely seated in its slot.
	Check the Vacation Switch should be in the ON position.
	Front Power Switch and computer power switch should be in the ON position.
	Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)
	Check the monitor and your display card with respect to compatibility and recommended settings.
	Check the signal cable connector for bent or pushed-in pins.
	Ensure the DVI input mode is set to DIGITAL when the MAC digital output is connected to the DVI-I connector.
Image Persistence	Image persistence is when a residual or "ghost" image of a previous image remains visible on the screen. To alleviate image persistence, turn off the monitor for as long as the previous image was displayed.
Image is unstable, unfocused or swimming is apparent	Signal cable should be completely attached to the computer.
	Check the monitor and your display card with respect to compatibility and recommended signal timings.
	If your text is garbled, change the video mode to non-interlace and use 60Hz refresh rate.
OSD is not sized properly	Use the OSD Image Adjust controls to increase or decrease the Coarse total.
	Check to make sure that a supported mode has been selected on the display card or system being used.
No signal	Signal cable should be completely attached to the computer.
	Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).
	If no video is present on the screen, turn the Power button off and on again.
LED on monitor is not lit (no green or amber color can be seen)	Power Switch should be in the ON position and power cord should be connected.
	Check the power cable should be connected surely.
No tilt	Refer to the Quick Start section, "Remove monitor stand for mounting" to insure correct installation of stand.
No rotate	Refer to the Quick Start section, "Remove monitor stand for mounting" to insure correct installation of stand.